

NEW SPECIES OF ODONATA FROM THE SOUTH-
WESTERN UNITED STATES.

PART I. THREE NEW ARGIAS.

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The following new species of *Argia* have been in the writer's hands for three years awaiting such time as he might have to describe them. The specimens from the Museum of Comparative Zoology labelled *solita* were called to my attention by Dr. Calvert. I wish to thank Dr. Calvert and Dr. Banks for the privilege of describing these. After I had taken *hinei* at Fillmore, Calif., I found that Dr. Hine had taken it in Arizona and his material was in Mr. Williamson's hands awaiting description. I wish to thank Mr. Williamson for the privilege of describing these.

***Argia solita*, n. sp.**

Holotype.—Male in the Museum of Comparative Zoology, Cambridge, Mass., with the pin labels; "Arizona, C. U. Lot-35;" and "A. solita." The Cornell catalogue shows that this was purchased from H. K. Morrison in 1883, when it was probably sent to Hagen for identification.

A study of the penes shows this to be a near relative of *Argia agrioides*. Among my material of *agrioides* from California are specimens from Chico which have unforked humeral stripes and which in drying have turned partially violet, so this may be a badly faded, pale variety of *agrioides*.

Length of abdomen 26 mm., length of hind wing 22 mm.

Colour: labium creamy; entire face and head otherwise violet, except rear of head which is pale (creamy?). Eyes?

Prothorax violet with a small black spot on the side. Mesothorax and metathorax violet, shading to creamy below with a mid-dorsal black stripe one-sixth as wide as either mesepisternum. Humeral stripe a hair line and a similar black line on second lateral suture. Legs and feet pale with a narrow, external black stripe on the femur. Wings hyaline, pterostigma mounting but one cell and brown in colour.

Abdomen violet. Segments 1 and 2 without distinct markings except a lateral spot at apex of seg. 1 and a narrow, black ring around apex of seg. 2. Segs. 3-6 each with a narrow, black

apical ring and a lateral apical spot of irregular outline which is one-fourth as long as the segment. Seg. 7 with an interrupted, irregular stripe along the side, below the apical end of which is a small detached spot. No apical ring on seg. 7. Segs. 8-10 blue?—some irregular, obscure dark areas along lower side of seg. 8, which may represent a black lateral stripe in better preserved material.

Dorsal appendages short with a large ventral hook on the internal angle. Inferior appendage, bilobed, the lobes triangular and subequal; the posterior lobe directed caudad, the dorsal lobe directed dorsad, bearing on its apex an ill-defined spur directed dorsad. Inferior appendages as long as seg. 10 and twice the length of the superior appendages.

Female unknown.

***Argia alberta*, n. sp.**

Holotype.—Male, collected by the writer in the Owen's Valley, at Laws, California, August, 1915, and now in the U. S. National Museum.

Paratype.—Female, collected by the writer in the Owen's Valley, at Laws, California, August 17, 1915, and now in the U. S. National Museum.

This species simulates *Argia sedula* in colour and appendages, but the penes show this to be more nearly related to the northern *violacea* group, while *sedula* is nearer *translata* and a large series of Mexican species.

I take pleasure in naming it after my father Albert Hamilton Kennedy.

Male, length of abdomen 22 mm., hind wing 18 mm.; female, abdomen 22 mm., hind wing 18 mm.;

Male.—Colour: Labrum pale blue, the remainder of the face and head blue with an olive or, in some dried material, a violet cast. Under surface of head yellowish gray with a small black spot on each side of the occipital foramen. Clypeus edged with black. A wide bar through the paired ocelli and a broad, black stripe behind each postocular area. Eyes dark blue, paler below.

Prothorax black dorsally with a bluish spot on each side. Mesothorax and metathorax dull blue (violet or brown in dried material) darker and duller on the dorsal surface and grayish on

the sides. Mid-dorsal stripe occupying one-third of the area between the humeral sutures. Humeral stripe half as wide as the mid-dorsal, its upper third forked. A black line on second lateral suture 1 mm. wide.

Pterostigmata brown subtended by one cell. Legs pale with blue on base of femora, broadly marked with black on the dorsal and anterior surfaces of the femora and on the anterior and internal surfaces of the tibiae. Tarsi black.

Abdomen with segs. 1-3 dull blue becoming duller or brownish on the lower sides. Seg. 1 with a baso-dorsal black spot. Seg. 2 with a narrow apical band and a lateral stripe black. Seg. 3 with the apical third and a lateral stripe black. Segs. 4-7 with the apical third and the dorsum black except a narrow basal band blue, the sides bluish or brownish. Segs. 8-10 pure, pale blue the lower edges more or less blotched with black.

Superior appendages twice as long as wide when viewed from above, slenderer in profile. A prominent, internal, apical hook directed ventrad. Inferior appendages bifid, the lower ramus round or bluntly triangular directed caudad, superior lobe directed dorsad and terminating in an acute point.

Female.—Colour as in the male but with the blue of the head and thorax paler. Eyes gray bluish above. Humeral stripe but half as wide as in the male, its branches linear. Legs marked as in male but the black on the femora reduced somewhat. Abdomen brown with a narrow apical band on segs. 2-6. Segs. 2-6 with an apical dorsal spot, a lateral stripe and an oblique spot on the lower apical angle of the side. Seg. 7 with dorsal half black except a narrow band across the base. Segs. 8-9 with dorso-lateral stripe. Seg. 10 pale. In some females seg. 6 is coloured like 7.

Mesostigmal laminae with no special modifications.

A single male of this is in the Snow Collection from Colorado Springs, Colo., collected by E. S. Tucker. A male and female from Provo, Utah, are in the collection of Dr. Ris.

***Argia hinei*, n. sp.**

Holotype.—Male, collected by the writer at Fillmore, Ventura Co., Calif., Aug. 7, 1915, and now in the collection of Mr. Williamson.

Paratype.—Female, collected by the writer at Fillmore, Ventura Co., Calif., Aug. 7, 1915, and now in the collection of Mr. Williamson.

Other material examined included thirteen males and a second female from Fillmore, Calif., and five males from Santa Barbara, Calif., all of which were of the dark typical coloration. A series of specimens from Arizona with less black were as follows: A male in Dr. Calvert's collection labelled "*A. solita*" by Hagen and which had been associated in the M. C. Z. collection with the type of *solita*. See figs. 17–22. Seven males and a female from the Huachuca Mts., Arizona, collected by Dr. Hine, July 28–29, 1907, and now in Mr. Williamson's collection. A single male from the Santa Rita Mts., Arizona, in the Snow Collection, Kansas University, collected by Dr. F. H. Snow, in June, at an elevation of 8,000 feet.

I take pleasure in naming this after Dr. Hine, a suggestion made by Mr. Williamson.

Male abdomen length 26–27 mm., hind wing 20 mm.; female abdomen 26 mm., hind wing 21 mm.

Male.—Colour: Labium and rear of head pale; labrum, face and top of head violet. A black bar through the ocelli; postocular areas edged posteriorly with black. Eyes violet in life.

Prothorax violet with a mid-dorsal stripe and a lateral stripe black.

Mesothorax and metathorax violet with mid-dorsal keel edged with pale; the mid-dorsal stripe slightly wider than either pale stripe bordering it. Humeral stripe one-third as wide as the mesepimeron, forked in its upper third. Second lateral suture narrowly black. Pterostigmata subtended by one cell, brown. Legs pale with a heavy black stripe on the upper and anterior surfaces of femur, and an internal black stripe on the tibia.

Abdomen with segs. 1–7 violet, segs 8–10 blue with the following black markings: a dorso-basal spot on seg. 1, narrow apical rings on segs. 2–7. Seg. 2 with a lateral stripe not reaching the apical edge. Segs. 3–5 with a spot covering apical fourth of the side, the pairs on segs. 4–6 confluent on the middorsal line. A small antero-lateral spot on seg. 6. Seg. 7 with the dorsal half black except a narrow basal band; and having a small latero-

apical spot in the ventro-apical angle of the segment. Segs. 8 and 9 with more or less black on the lower sides.

Some males show antero-lateral spots on segs. 4-6.

The specimens from Arizona have less black on the head and thorax. In Dr. Calvert's specimen the humeral stripe shows no trace of a fork. In the male from the Santa Rita Mts. the humeral stripe is forked and almost as heavy as in the Fillmore and Santa Barbara specimens. The specimens from the Huachuca Mts. have humeral stripes from the narrow form in the Dr. Calvert male to those in which a fork is suggested by a more or less perfect branch, but in all cases narrow.

Appendages: superior appendage cupped on the ventral surface, with a tooth on the ental edge, which turns under the appendage thus being directed ectad; and a blunt, black subapical ventral tubercle. Inferior appendage bifid, the lower lobe rounded or triangular, the upper directed caudad and bearing a small tooth on its upper edge.

Female coloured brown with the black markings on the head and thorax as in the male. Eyes in life brownish violet. The abdomen with lateral stripes on segs. 2-9, those on segs. 7 and 8 more or less confluent with their mates along the mid-dorsal line. Segs. 2-8 with a latero-apical oblique spot on the lower apical angle of the side. Segs. 2-7 with a narrow apical ring.

The female mesostigmal laminae have each a small posterior, free lobe.

EXPLANATION OF PLATE V.

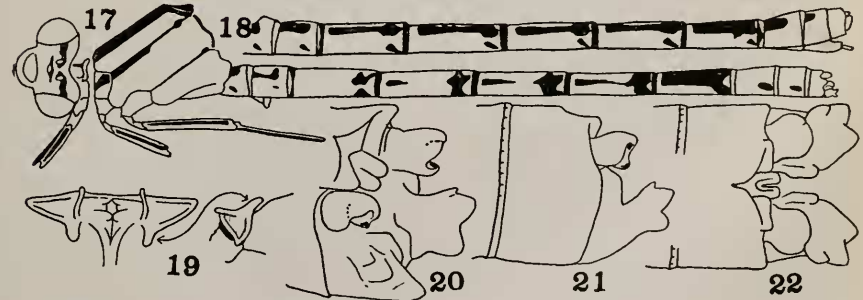
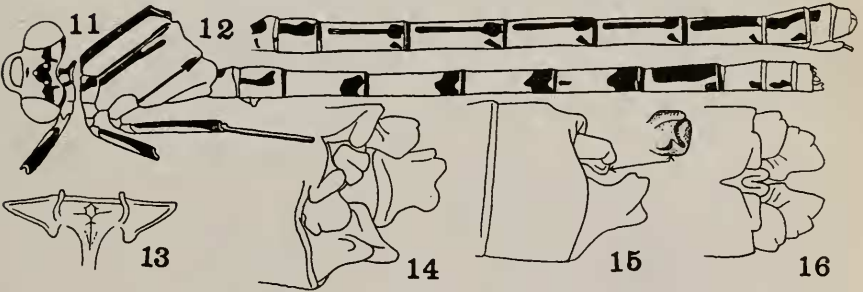
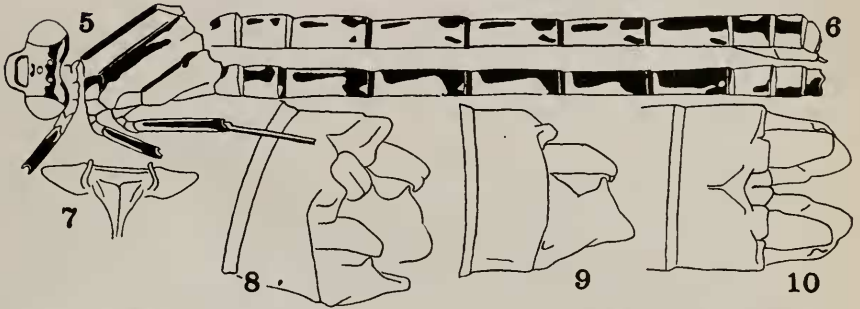
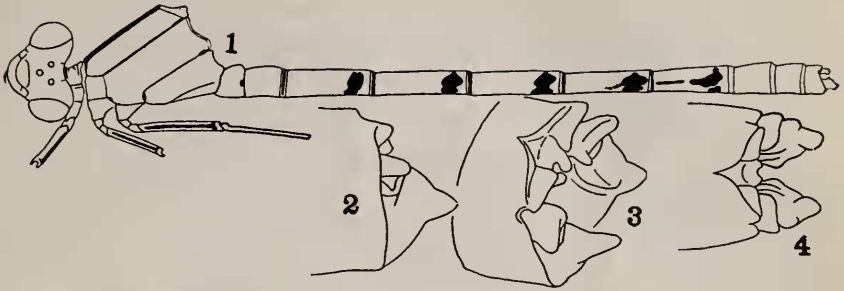
Figs. 1-4. Holotype of *Argia solita*. Fig. 1 colour pattern, figs. 2-4 appendages.

Figs. 5-10. Types of *Argia alberta*. Fig. 5 colour pattern of male, fig. 6 of abdomen of female; fig. 7 mesostigmal lamina of female. Figs. 8-10 male appendages.

Figs. 11-16. Types of *Argia hinei*. Fig. 11 colour pattern of male, fig. 12 of abdomen of female; fig. 13 mesostigmal lamina of female. Figs. 14-16 appendages of male.

Figs. 17-22. Pale *Argia hinei* from Arizona. Figs. 17, 20-22 the male labeled *solita* by Hagen and now in Dr. Calvert's coll.

Figs. 18-19. Female from the Huachuca Mts.



THREE NEW ARGIAS.

See p. 260.